

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

pplication of:

Liu, et al.

Serial No.: 10/608,404

Confirmation No.: 7966

Filed:

June 26, 2003

For:

Method and Composition

For Polishing A Substrate

Group Art Unit: 1765

Examiner: Michael P. Alexander

MAIL STOP AMENDMENT Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

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CERTIFICATE OF MAILING 37 CFR 1.8

I hereby certify that this correspondence is being deposited on August 4, 2005 with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment. Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

August 4, 2005

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The Applicants, and the Attorney who signs below on the basis of the information supplied by the inventor and the information in his file, submit herewith patents, publications, or other information of which they are aware, which may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR § 1.56.

While the information submitted in this Supplemental Information Disclosure Statement may be material pursuant to 37 CFR § 1.56, it is not intended to constitute an admission that any patent, publication, or other information referred to therein is prior art for this invention unless specifically designated as such.

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The patents and/or publications submitted herewith are set forth on the attached Form PTO-1449.

The Commissioner is hereby authorized to charge the sum of \$180.00 due under 37 CFR § 1.17(p) pursuant to § 1.97, and any other fee necessary to make this submission timely, to the Deposit Account No. 20-0782/AMAT/5699.P3/BKH.

Respectfully submitted,

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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 3

Complete if Known					
Application Number 10/608.404					
Filing Date	JUNE 26, 2003				
First Named Inventor	LIU, et al.				
Art Unit	1742				
Examiner Name	MICHAEL P. ALEXANDER				
Attorney Docket Number	AMAT/5699.P3/CMP/CMP/RKK				

	U.S. PATENT DOCUMENTS						
Examiner	Cite No.1	Document Number Publication		Name of Patentee or Applicant of	Pages, Columns, Lines, Where Relevant		
Initials *		Number - Kind Code ² (if known)	MM-DD-YYYY	Cited Document	Passages or Relevant Figures Appear		
	A1	US-6,893,476	5/17/2005	6,893,476			
	A2	US-2001/0016469	8/23/2001	Chopra			
	A3	US-2001/0052351	12/20/2001	Brown, et al.			
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Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ - Number ⁴ - Kind Code ⁵ (<i>if know</i>		blication Date DD-YYYY		e of Patentee or of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
	B1	EP 0 699 782	3/6/	1996	Datta			
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	B13	WO 02/75804	9/26	/2002	Chen			
	B14	WO 02/23616	3/21	/2002	Wang			
Examiner Signature				Date Consid	ered	_		

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Substitute for form 1449A/PTO Complete if Known Application Number 10/608,404 SUPPLEMENTAL INFORMATION JUNE 26, 2003 Filing Date **DISCLOSURE** First Named Inventor LIU, et al. STATEMENT BY APPLICANT 1742 Art Unit (Use as many sheets as necessary) MICHAEL P. ALEXANDER Examiner Name Sheet 2 AMAT/5699.P3/CMP/CMP/RKK of Attorney Docket Number

	·	NON PATENT LITERATURE DOCUMENTS	
Examiner Initials *	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	C1	International Search Report for PCT/US02/40754 dated August 5, 2003. (AMAT/5998PC)	
	C2	PCT International Search Report for PCT/US04/17691, dated November 16, 2004. (AMAT/5699.PC03)	
	C3	PCT Written Opinion for PCT/US04/17691, dated November 16, 2004. (AMAT/5699.PC03)	
	C4	Besser et al., "Mechanical Strain Evolution in Cu/low K Interconnect Lines", <i>Mat. Res. Soc. Symp. Proc.</i> Vol. 795, 2004 Materials Research Society, pp. U1.1.1-U1.1.6.	
	C5	Chandrasekaran, et al., "Effects of CMP Process Conditions on Defect Generation in Low-k Materials", <i>Journal of The Electrochemical Society</i> , pp. G882-G889 (2004).	
	C6	Chang, et al., "Microleveling Mechanisms and Applications of Electropolishing of Planarization of Copper Methalization", J. Vac. Sci. Technol. B 20(5), Sep/Oct 2002, pp. 2149-2152.	
	C7	Chang, et al., "Superpolishing of Planarizing Copper Damascene Interconnects", Electrochemical and Solid-State Letters, pp. G72-G74 (2003).	
	C8	Contolini, et al., "Electrochemical Planarization for Multilevel Metallization", <i>J. Electrochem. Soc.</i> , Vol. 141, No. 9, September 1994, pp. 2503-2510.	
	С9	Du, et al., "Mechanism of Copper Removal During CMP in Acidic H2O2 Slurry, <i>Journal of The Electrochemical Society,</i> pp. G230-235 (2004).	
	C10	Hu, et al. "Copper Interconnection Integration and Reliability", <i>Thin Solid State Films</i> , pp. 84-92, (1995).	
	C11	Jin-Hua, et al., "An XPS and BAW Sensor Study of the Structure and Real-Time Growth Behavious of a Complex Surface Film on Copper in Sodium Chloride Solutions (pH=9), Containing a Low Concentration of Benzotriazole", <i>Eletrochimica Acta</i> , Vol. 43, Nos 3-4, pp. 265-274, 1998.	

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	Examiner	Date	
1	Signature	Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance

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Attorney Docket Number

Substitute for form 1449A/PTO Complete if Known 10/608.404 Application Number SUPPLEMENTAL INFORMATION Filing Date JUNE 26, 2003 **DISCLOSURE** LIU, et al. First Named Inventor STATEMENT BY APPLICANT 1742 Art Unit (Use as many sheets as necessary) Examiner Name MICHAEL P. ALEXANDER

	NON PATENT LITERATURE DOCUMENTS					
Examiner Initials *	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.				
	C12	Kaufman, et al., "Chemical-Mechanical Polishing for Fabricating Patterned W Metal Features as Chip Interconnects", <i>J. Electrochem. Soc.</i> , Vol. 138, No. 11, November 1991; The Electrochemical Society, Inc. pp. 3460-3465.				
	C13	Kondo, et al., "Role of Additives for Copper Damascene Electrodeposition: Experimental Study on Inhibition and Acceleration Effects", <i>Journal of The Electrochemical Society</i> , pp. C250-C255 (2004)				
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	C15	Qafsaoui, et al., "Quantitative Characterization of Protective Films Grown on Copper in the Presence of Different Triazole Derivative Inhibitors", <i>Electrochimica Acta 47 (2002)</i> , pp. 4339-4346.				
	C16	Tamilmani, et al., "Potential-pH Diagrams of Interest to Chemical Mechanical Planarization of Copper", <i>Journal of The Electrochemical Society</i> , V. 149, pp. G638-G642 (2002).				
	C17	Tromans, et al., "Growth of Passivating CuBTA Films on Copper in Aqueous Chloride/Benzotriazole Solutions", <i>Electrochemical and Solid-State Letter</i> , V. 5, pp. B5-B8 (2002).				
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Examiner	Date	
Signature	 Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance

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